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OVERSEAS HOUSING: REVIEW OF DOD'S ECONOMIC ANALYSIS OF
OVERSEAS HOUSING COSTS(U) GENERAL ACCOUNTING OFFICE
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Briefing Report to the Chairman,
Subcommittee on Military Construction,
Committee on Appropriations, House of
Representatives

April 1986

OVERSEAS HOUSING

Review of DOD's Economic Analysis of Overseas Housing Costs

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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

NATIONAL SECURITY AND
INTERNATIONAL AFFAIRS DIVISION

APR 8 1986

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The Honorable W. G. Hefner
Chairman, Subcommittee on Military Construction
Committee on Appropriations
House of Representatives

Dear Mr. Chairman:

At your request, we recently briefed your representative on the results of our review of the quality of the military services' economic analyses of overseas housing costs. This report summarizes the results of that work. The full report is being finalized and will be issued shortly to the Secretary of Defense.

We reviewed three economic analyses made by the Army, the Navy, and the Air Force. The services made these analyses, issued between December 1982 and January 1984, to identify the most cost-effective alternative for satisfying military family housing requirements in Europe. The Navy's analysis showed that leasing was the preferred alternative in Signonella, Italy; the Army concluded that military construction was the only feasible alternative in Bad Kreuznach, Germany; and the Air Force analysis indicated that a build-to-lease arrangement would be the most cost-effective alternative in Torrejon, Spain.

We found the quality of these three economic analyses to be poor because of the large variety of problems they contained, the high frequency of problem occurrence, and the effects of these problems on the major conclusions of the analyses. Nine types of problems occurred a total of 16 times in the three analyses. These were:

1. Inappropriate interest rate used in discounting costs.
2. Very limited sensitivity analysis.
3. No explanation of the special circumstance(s) present when build to lease was determined to be less expensive than military construction.
4. Unrealistically high depreciation rate assumed for U.S.-owned buildings and land.



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5. Use of foreign exchange and/or inflation expectations far different from those widely accepted by professional economic forecasters.
6. No consideration of the financial viability of a recommended alternative.
7. Use of an inappropriate method to estimate expected maintenance costs.
8. No rationale with supporting evidence for the assumption that expected utility expenses for military construction were greater than those for build to lease.
9. Unrealistic assumption concerning the relationship between rental and sale prices of land.

The first two problems were found in each study, the next three were found in two of them, and each of the remaining problems did not occur in more than one study. All but one of the 16 problems had the effect of making leasing appear to be more attractive than was warranted. Collectively, these problems were important enough to result in at least one misleading major conclusion in each study.

In performing our analysis, we identified those economic assumptions which might affect the studies' conclusions. We replaced those assumptions that we believed were questionable with assumptions we believed to be more reasonable (our base case), using data that were readily available when each service performed its analysis. We also performed sensitivity tests to determine whether our conclusions varied under different economic assumptions. Our analysis showed that:

- Even though the Navy study concluded that straight leasing was the least expensive alternative, our base case and 11 of 12 cases in our sensitivity tests found lease with purchase to be the least expensive alternative.
- Although the Army study concluded that using housing manufactured in the United States and erected in West Germany would cost more than leasing, our base case and 8 of 10 cases in our sensitivity analysis showed that U.S.-manufactured housing was less expensive.
- The Air Force study did not fully analyze the financial viability of the build-to-lease alternative, which it found to be the least expensive. Using Air Force assumptions, the project may have been economically unsound for an investor. Specifically, our analysis indicates that either the investor's lease revenues would

have been substantially less than the mortgage payment or the lessor would have had to be able to build housing at much less cost than the Air Force estimated.

In response to a directive from the House Committee on Appropriations, the Department of Defense (DOD) issued new guidance for preparing economic analyses of foreign housing. This new guidance was issued in September 1984, after we began our evaluation of the three studies. We reviewed this guidance to determine the affect it would have had on the three studies we reviewed. We concluded that had this guidance been in effect when these three analyses were performed, it would have lessened the severity of only one of the nine types of problems we identified and, at best, would have eliminated one other. Therefore, we believe this guidance alone will only slightly improve the quality of future economic analyses.

We believe that future economic analyses by DOD which involve the use of present-value analysis should discount only current dollar expenditures, and only with the average rate of interest (yield) on Treasury obligations which mature during the period of anticipated expenditures. We recognize that DOD is required to follow Office of Management and Budget (OMB) guidance in performing its analyses. However, we understand that OMB is currently revising its Circular A-104 to require the recommended type of discounting procedure. If this revision is not issued soon, we believe that DOD should request a waiver from the current version to allow it to use our recommended method.

We also believe that DOD needs to issue additional guidance on conducting economic analyses of overseas family housing (1) expanding instructions on sensitivity tests, (2) requiring full explanation of the special circumstance(s) present when the build-to-lease alternative is found to be less expensive than the military construction alternative, (3) giving explicit directions on when and how to incorporate political risk considerations in estimates of depreciation and residual value, (4) requiring the use of expected inflation and exchange rates representative of those accepted by professional economic forecasters, (5) requiring that housing alternatives be evaluated for financial viability before they are recommended, (6) requiring a good rationale and supporting data when assumed maintenance or utility expenses in build to lease are significantly different from military construction of approximately the same square footage, and (7) explaining how to estimate the rental and sale prices of land.

Our upcoming report includes recommendations to DOD on each of these matters. DOD, in its comments on a draft of that report, agreed with some of the findings, but disagreed in four major areas.

DOD stated that the three analyses we reviewed are not representative of the current quality of economic analyses

because they were performed before the latest Office of the Secretary of Defense (OSD) guidance was issued in September 1984. At the time we began our evaluation, each of the three studies we evaluated was, with one minor exception, the most recently available economic analysis of European housing programs performed by a military service. As previously noted, our review of the OSD guidance indicated that it would not substantially improve the quality of the economic analyses.

The second area of disagreement concerns inflation and exchange expectations. DOD stated that, in two studies, inflation expectations were obtained by analysis of site-specific historical data. Since neither DOD nor these studies documented this analysis, we are unable to confirm that inflation expectations were formed in this manner. DOD believes that its analysis of site-specific historical data provides a better method of projecting future housing prices than the method we used of averaging then current inflation expectations of the three major U.S. econometric forecasting firms. Lack of documentation also prevented us from determining whether DOD's analysis of site-specific historical data adequately explains why this method yielded forecasts that greatly differ from those predicted by the three major U.S. econometric forecasting firms. These firms' inflation forecasts have been shown to be more accurate on the average than those based on simpler theories, such as assuming one year's inflation rate will equal that of the next year, or that inflation will always equal zero.

DOD's position is that the forecast of exchange rates is at best a guess. DOD stated that there was no basis for assuming that exchange rates during a period of 20 or 30 years hence will be higher or lower than they are now. Its 1984 guidance requires that current exchange rates be held constant throughout the period of analysis. This guidance will result in exchange rate expectations that differ substantially from those used in our analyses, especially over those long time periods when a country's expected inflation rate greatly differs from those of its trading partners.

We believe that some forecasting methods are superior to others. Although forecasts made by the leading U.S. econometric firms have a degree of imprecision, they are not simply guesses. The average exchange rate forecasts that we used were consistent with a principle believed by many professional economists to hold over periods of time as long as the studies' periods of analysis.

In a third disagreement, DOD states that only an economic analysis can determine whether build to lease will be less expensive than military construction. We believe that, in most cases, the desire of a lessor to obtain profits from leasing activities and the necessity of the lessor borrowing at interest rates higher than those charged the U.S. government will cause leasing to be more expensive to the U.S. government than military construction. However, we recognize that special circumstances

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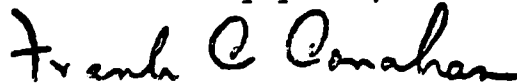
can reduce a lessor's cost sufficiently to cause build to lease to be less expensive than military construction. Consequently, any economic analysis that finds leasing to be the least expensive alternative should describe the special circumstances so that the validity of the analysis can be assessed.

Finally, DOD stated that we incorrectly characterized their analyses as poor because the inappropriate interest rate used in discounting, which was responsible for two of the three analyses' results, was required by the Office of Management and Budget. We based our characterization on the many types of problems the studies contained, the high frequency of these problems, and the major effects of these problems on the studies' principal conclusions.

Copies of this report are being sent to the Secretary of Defense, the Secretaries of the Army, the Navy and the Air Force, and to the Director, Office of Management and Budget. Copies will also be made available to other interested parties upon request.

We hope that this report meets your immediate needs. If you have any questions or if we can be of further assistance on this issue, please contact me or Mr. Harry R. Finley, Senior Associate Director on (202) 275-4268.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Frank C. Conahan". The signature is fluid and cursive, with the first name "Frank" being more prominent.

Frank C. Conahan
Director

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